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The political sustainability of climate policy: The case of the UK Climate Change Act

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ABSTRACT

This paper assesses the forces working for and against the political sustainability of the UK 2008 Climate Change Act. The adoption of the Act is seen as a landmark commitment to action on climate change, but its implementation has not been studied in any depth. Recent events, including disagreements over the fourth carbon budget and the decarbonisation of the electricity sector, shows that while the Act might appear to lock in a commitment to reducing emissions through legal means, this does not guarantee political lock-in. The assumption, made by some proponents of the Act, that accountability of political leaders to a public concerned about climate change, via Parliament, would provide the main political underpinning to the Act is criticised. An analysis of alternative sources of political durability is presented, drawing on a framework for understanding the sustainability of reform developed by Patashnik. It is argued that the Act has helped create major institutional transformations, although the degree to which new institutions have displaced the power of existing ones is limited. The Act has produced some policy feedback effects, especially in the business community, and some limited investment effects, but both have been insufficient to withstand destabilisation by recent party political conflicts. The Climate Change Act remains at risk.

1. Introduction

At the end of November 2008, the UK Parliament passed the world's first Climate Change Act (henceforth 'the Act') setting a legally binding greenhouse gas emissions reduction target of an 80% cut from 1990 levels by 2050. The Act has come to play a central role in the UK's image as a leader on climate change (e.g. Schreurs and Tiberghien, 2010: 50–52). During its passage through Parliament the legislation was widely seen as an historic step. It enjoyed broad political support, was hailed by political leaders and the media as 'revolutionary' (e.g. Tempest, 2007) and was welcomed by environmentalists, trades unions and business.

The central pillar of the Act was the 2050 target, achieved through a series of five yearly carbon budgets, recommendations for which were to be made by a new independent expert Committee on Climate Change. It also required the Government to put forward "policies and proposals" sufficient to ensure that carbon budgets were met. The Act was intended as a means to bind future governments into meeting emissions budgets on the route to the 2050 target. This constraint on politicians was in turn aimed at giving confidence to investors in low carbon technologies and infrastructure, "safe in the knowledge that governments would sustain the battle against climate change over the medium to long term" (Friends of the Earth, n.d.). However, less than four years after it was passed into law, there are signs that the Act has not so far succeeded in securing either political commitment or investor confidence.

Implementation initially went smoothly. Recommendations from the Committee for the first three carbon budgets (up to 2022) were agreed by the Government in 2009. A newly created Department for Energy and Climate Change immediately set about developing a Low Carbon Transition Plan to deliver these budgets. The 2010 general election saw the formation of a coalition Government which the new Prime Minister declared would be the 'greenest government ever'.

However, signs of trouble emerged in the process of agreeing the fourth carbon budget, which extended into the 2020s, beyond any existing commitments by the European Union, and also had important implications for upcoming investment decisions in the power sector. In early 2011, the Business Secretary Vince Cable intervened, arguing that the proposals for the fourth budget would impose too many costs on the economy and could not be agreed as they stood. After heavy lobbying by environmentalists, the Prime Minister did eventually step in to insist that the Climate Change Committee's proposal be accepted, and the fourth budget was finally agreed in May. However, the Chancellor, George Osborne,

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ensured that the decision would be revisited in an unprecedented review of the fourth budget in 2014.

Further rifts were to come. In October 2011, the Chancellor told the Conservative Party Conference that "a decade of environmental laws and regulations are piling costs on the energy bills of households and companies" and pledged to prevent the UK from cutting emissions more quickly than other European countries. In March 2012, the Government announced a new emissions performance standard that would allow the operation of gas-fired power stations without carbon capture until 2045 (DECC, 2012a). The chairman of the Climate Change Committee warned that the standard jeopardised the feasibility of future emissions reductions targets. In the summer, the Chancellor wrote to the Energy Secretary demanding that unabated gas should play a core role in electricity generation to at least 2030, that the Government should not a set a 2030 target for electricity emissions, and that a cap be set on decarbonisation policy costs financed through energy bills. The World Wildlife Fund accused the Government of allowing the Act to "wither by neglect" (Allott, 2012). The Committee chairman insisted that a target for electricity emissions was needed to "buttress the signal provided by the carbon budgets", but the published Energy Bill contained no decarbonisation target, and an attempt led by rebels in the House of Commons in the spring of 2013 to get one included failed.

Open conflict in government was alarming investors (Godsen, 2012). Seven global electricity technology firms wrote to the Energy Secretary in September 2012 expressing concerns that the UK was in danger of undermining its reputation as a country with low political risk for energy investments. According to industry sources, uncertainty had pushed up the cost of debt on energy projects by 15% (Harper, 2012). By early 2013, a call for the Act itself to be repealed appeared in a major national newspaper (The Telegraph, 2013).

These events are a sharp reminder that "the passage of a reform law is only the beginning of a political struggle" (Patashnik, 2008: 3). In the case of a major transformation such as that of decarbonising an entire economy, this struggle may last several decades. However, while some observers have noted the gap between the ambition contained in the Act and the difficulties of implementation (e.g. Helm, 2010; Giddens, 2009: 83–88), it remains the case that most political analysis of climate policy focuses on the *adoption phase* (for detailed accounts of the drivers of the adoption of the Climate Change Act see Carter, 2006, 2010; Carter and Ockwell, 2007; Hill, 2009; IoG, 2012; Rollinson, 2010). By contrast, in this paper I examine the evolution of political dynamics *after* climate policy is adopted. Of particular interest here is the possibility that, once formally adopted, policy may subsequently be undermined or even reversed in its implementation phase.

As the centrepiece of UK climate policy, underpinning more detailed sectoral policies, the Climate Change Act is the main case study. In examining the political dynamics of its implementation, I draw on a framework for analysing the sustainability of public interest reforms after adoption developed by Patashnik (2008), applying it for the first time both to climate change as a particularly extreme kind of public interest or collective action problem, and to the UK context.

The analysis offered here draws on interviews with two of the original actors involved in the adoption of the Climate Change Act: Bryony Worthington, who at Friends of the Earth provided the idea of carbon budgets and went on to draft parts of the Act; and Michael Jacobs, who was energy and environment adviser to the Chancellor, and subsequently Prime Minister, Gordon Brown, from 2004 to 2010. It also draws on interviews with members of the business community who preferred to remain anonymous.

The next section lays out the theoretical approach. Section 3 considers the nature of climate change as a public interest policy challenge. The view of some proponents of the Act was that it would be politically underpinned by public concern about climate change, expressed through accountability to Parliament. However, I argue that this view is consistent neither with political theory nor with evidence on the low salience of climate change in the UK. This issue has been noted in passing (e.g. Carter, 2008, 2010; Lorenzoni and Pidgeon, 2006; Hale, 2010; Harrison and Sundstrom, 2010) but its political implications are rarely explored in any depth. Patashnik's framework suggests that public indifference means that the durability of climate policy in the UK depends heavily on the degree to which it has had other political lock-in effects. Section 4 focuses on how far the transforming the institutional landscape. Section 5 examines how far affiliations, interests and identities in key political groups have been affected by the Act, and Section 6 looks at how far the Act has led to the creation of new vested interests through financial and physical investments in the electricity sector. The paper concludes with an overall assessment of the risks of policy reversal, and an evaluation of the usefulness and limitations of Patashnik's approach.

2. Analytical approach

As noted above, while there is a growing literature on the politics of climate change, there has been relatively little study of the politics of implementation of climate policy. It has long been recognised in political science that policy change is a process over time, crucially including an implementation phase post-adoption (Pierson, 2005; Hill, 2012). The early policy literature framed implementation in terms of what is known in rational choice theory as a "principal-agent problem", i.e. how policy makers can get bureaucrats to implement policy in the spirit it was intended, without being distorted or undermined by the interests of those bureaucrats (e.g. Pressman and Wildavsky, 1973). Subsequent research (reviewed in Hill, 2012: 209–218) has opened up the implementation process, recognising that policy continues to be defined during the process of implementation, and that implementation is just as much a contested and political process as adoption.

Within this field, of particular relevance for climate policy are the political dynamics of policy reform undertaken in the wider *public interest or good*. A long-standing theme in political science, going back to Olsen (1965), is the expectation that special interest groups are likely to drive political decision making more than the public good, since such groups have lower costs to and greater benefits from getting their interests represented via organised lobbies than do the general public. Despite this expectation, public interest policies do get passed, and the Climate Change Act is an example of just such a policy. However, public interest legislation can also expect to face particular types of problem in the implementation phase. Where there is a special interest group pressing for a policy change, the implementation of that change will benefit from the continued support of that group. By contrast, public interest reform typically involves the loss of benefits by previously privileged groups and at the same time, the benefits for the wider public may be widely diffused, and politically not very visible. As we shall see below, this condition applies *a fortiori* to climate policy.

The main analysis for the study of the political dynamics of implementation of public interest policies comes from the work of Patashnik (2003, 2008). His argument is that the sustainability of such policy depends on the "reconfiguration of political dynamics" (Patashnik, 2008: 3). To achieve this, policy change must "disrupt longstanding patterns of governance, recast institutions, upset existing power monopolies and create policy feedback effects that

render it difficult or unattractive for the government to reverse course. Reforms that do not accomplish these things, or do so only superficially, can be expected to unravel." (Patashnik, 2008: 17). Patashnik identified a number of changes that a policy must bring about in order for it to be durable.

Institutional change cannot guarantee the success of a policy reform, but a supportive institutional environment gives it a better chance of enduring. Within Patashnik's framework, such changes can involve structural transformation that breaks up "cozy policy subsystems" and strengthening governing capacities in the relevant policy area (Patashnik, 2008: 26). However, policy outcomes can rarely be locked in purely by new institutional arrangements, since they are themselves the result of political compromise, and if opposition to reform remains, they can be reversed.

Thus even more important is the transformation of political dynamics themselves. This transformation will come partly through the *destruction or neutralisation of the power of those opposed to reform*. As Patashnik notes (2008: 28), this process tends to be more complete in situations where the power of economic interest groups can be eroded through market processes. By contrast, it is often hard to dislodge political opponents completely. As discussed below, this is a particularly important potential danger for climate policy. In such situations it becomes crucial to achieve '*policy feedback*' effects where a policy change creates its own new constituency (Pierson, 1993; Mettler and Soss, 2004). The paradigmatic example is the creation of the welfare state:

> "reforms were popular with the mass public, especially the broadbased policies in the areas of pensions, education, and health care. . . . The support for policies quickly broadened once citizens enjoyed the benefits of the new policies, and thus the mass opposition to cutbacks in the policies was much broader than the mass support for their introduction. *Thus, the new policy regime fundamentally transforms the preferences of the population*." (Huber and Stephens, 2001: 29, emphasis in the original)

In this case, feedback worked through creating new constituencies, but it may also work through increasing or decreasing the political cohesion of previously favoured sectors, or altering the "cognitive mindset" of existing groups, transforming their strategies or preferences. If well framed, policy changes can also transform the public image of politically important groups, for example tarnishing the public image of a group previously held in high esteem. Policy feedback can also work by inducing actors to make commitments in the form of *investments* whose value is conditional on the expectation that the reform will be maintained. This literally creates new vested interests, and "suggests an increasing returns process in which groups develop assets that are specific to the new policy regime" (Patashnik, 2008: 31).

Where policy feedback transforms both group identities and investments, change becomes "so deeply rooted in political practice and culture over time that its dismantlement becomes all but unthinkable" (Patashnik, 2008: 26–7). However, in practice, many policy changes fail to build a constituency, a situation that Patashnik (2008: 168) characterises as "winnerless reform". There are, in addition, intermediate situations, where reform creates new affiliations and identities but not new investments, or vice versa, in which policy change remains incomplete and potentially vulnerable to reversal (Patashnik, 2008: 32).

The current use of Patshnik's framework in the case of the Climate Change Act is, to my knowledge, not only its first application to climate policy, but also to any case outside of the USA. I would argue that these extensions are apposite for two reasons. First, the framework provides an analytical structure for examining exactly the kind of problem that Patashnik's framework focuses on, i.e. the political dynamics of implementation of public interest reform.

Second, while Patashnik developed his approach through a number of case studies of American public interest legislation, its key building blocks are applicable to other political and institutional contexts (at least in liberal democracies), because they relate to underlying and quite general political concepts. For example, while the institutional factors relevant for the political sustainability of the Climate Change Act will be quite different from those relating to, say, US tax reform, it is nevertheless entirely possible to identify such factors. The main general difference that may apply between the dynamics of US and British policy reform is that, with fewer separation of powers in the latter context, the opportunities for opposition to reform that has been directed from the centre (i.e. the Prime Minister) may be less. However, the power of the centre can vary considerably over time, and many such opportunities remain.

Finally, however, while Patashnik's framework does help structure the problem and identify key variables, the assessment of how far and in what ways a policy change is sustainable is ultimately a matter of judgement. There are thus degrees of irreversibility, and very few policy changes are simply 'untouchable' as, say, the creation of the NHS in the post-war British context. The quality of the judgement in turn depends on the nature of the evidence and its degree of ambiguity.

As noted, the problem of securing politically sustainable policy change in the case of public interest reform is particularly difficult. The nature of the difficulty arises from the nature of the underlying policy problem. The first step in analysing the case of the Climate Change Act is therefore to examine the nature of climate change as a public interest issue.

3. The nature of climate change as a public interest issue

Much public interest reform faces the problem that it is likely to be opposed by special interests that will lose out, whilst at the same time benefits are widely diffused and politically invisible. In this section I argue that climate policy represents a particularly extreme example of this type of problem.

However, it is also the case that many of those involved in pressing for and designing the Climate Change Act did not believe that this was the case. Although the Climate Change Act contains targets and budgets that are in principle legally binding, it was actually conceived of as a way of ensuring long term carbon emissions reduction through *political* mechanisms. According to Hill (2009: 6): "The core philosophy of the Act is [that a] built-in series of duties, actions and reports will create the transparency, accountability and political pressure necessary to achieve the purpose of the legislation". For those who campaigned for it, key assumptions were that the principal cause of the failure to meet emission reductions was a lack of political will amongst leaders, and that public concern about climate change, expressed via elected MPs in Parliament, would play a critical role in holding future governments to account for setting and delivering challenging carbon budgets. For example, Tony Juniper, Director of Friends of the Earth and subsequently a senior adviser on the Big Ask campaign, argued in November 2006:

> "So if it is not solutions we are short of, why is it that so many responses express frustration at slow rate of progress to date? Largely because so far the political will to seriously tackle this problem just hasn't been there. One reason for this is the view of many in Government that there isn't the "political space" to attempt robust solutions. I think this debate shows that there

has been a dramatic change in the public mood and it is now politicians who are lagging behind." (Friends of the Earth, 2006)

Such views can also be found in the academic literature. For example, Lorenzoni et al. (2008) argue that "there is a failure to reflect emerging evidence of public concern about climate change and calls for strong political leadership in national policy-making" (Lorenzoni et al., 2008: 113–114). They conclude that there is a "disjunction between the government's weak positioning on climate change and emerging public concern about climate change" (Lorenzoni et al., 2008: 119).

It is true that, by the 2000s, polling evidence showed that a large majority of the UK public accepted the existence of climate change and expressed *concern* about it fairly consistently (Spence et al., 2010; Anable et al., 2006; Downing and Ballantyne, 2007; DEFRA, 2010). In this sense, climate change in the UK had become what Stokes (1963) termed a 'valence' issue, i.e. one on which most people agree, and on which they judge political parties by their competence in delivery. However, Stokes also observed that issues vary in their *salience* – i.e. the degree to which they are uppermost in voters' minds – and it is salience that is decisive in determining the political significance of an issue (see also Page and Shapiro, 1983; Kingdon, 1995; Burstein, 2003; Hobolt and Klemmemsen, 2005).

Salience is commonly measured by the percentage of people naming particular issues as 'the most important' or 'another important' facing the country in tracker polls. On this measure, there was a surge in public attention to climate change, accompanied by a wave of media interest, during the middle of the last decade and predating the campaign for the Climate Change Bill (Fig. 1). This was indeed an important part of the context for the adoption of the Climate Change Bill, and Juniper's quote above reflects this change in public mood. But even at the height of the salience of climate change in 2006–07, voters were far more concerned about other issues, such as crime, immigration and health care (Fig. 2) (see also Carter, 2008: 198). Between 1997 and 2011, the percentage of people naming it as a priority concern rose only twice, for relatively brief periods, into double figures.

The modestly higher salience of climate change in the mid-2000s failed to transform the marginal role of environmental issues in UK electoral politics (Carter, 2006, 2008, 2010). While 2% of voters identified the environment as amongst the five most important issues facing the country in the lead up to the 2005 election (Whiteley et al., 2005), that figure had increased to only 3% in 2010 (Clarke et al., 2010). Party manifestos contained more

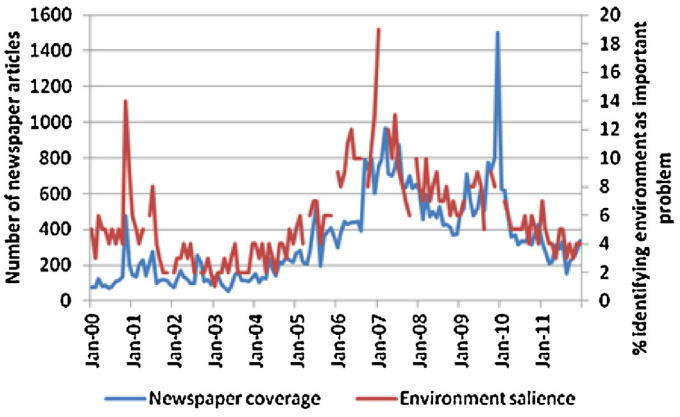

Fig. 1. Salience of pollution/environment and newspaper coverage of global warming/climate change.
Sources: Boykoff, M., Mansfield, M. (2012; Ipsos MORI Issues Index (http://www.ipsos-mori.com/researchpublications/researcharchive/poll.aspx?oItemID=56&view=wide)).

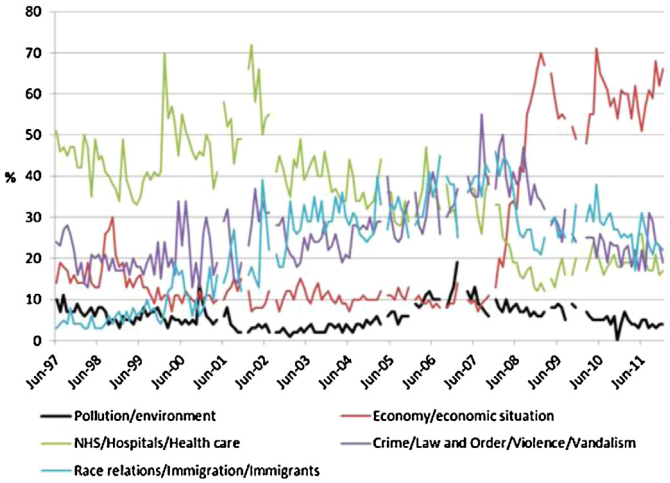

Fig. 2. Most important and other important issues facing Britain today.
Source: Ipsos MORI Issues Index (http://www.ipsos-mori.com/researchpublications/researcharchive/poll.aspx?oItemID=56&view=wide).

environmental commitments in 2010 than in 2005 (Rootes and Carter, 2010: 993), but contrary to Helm's (2010) argument that parties competed to 'go green', the election campaign itself, including the televised leaders' debates, was dominated by the economic crisis and immigration. As Lockwood (2013: 19–20) shows, there is also no evidence for claims (e.g. Helm, 2010: 186) that small groups of electorally important voters give higher salience to the environment.

Moreover, the salience of climate change soon declined with the onset of the financial crisis (Scruggs and Benegal, 2012); indeed public interest followed the pattern of what Downs (1972) identified as a 'issue-attention cycle', accompanied by related media attention 'frenzy' (Baumgartner and Jones, 1993). The salience of the environment in the UK was actually lower at the end of 2011 than it was in 1997. As Patashnik (2008: 22–25) notes, strategies used in pressing for the adoption of policy quickly reach their limitations in the implementation phase, and this was indeed the case for a campaign that was primarily based on drawing the problem of climate change to peoples' attention. Ironically, the adoption of the Climate Change Bill in the autumn of 2006, near the peak of the cycle, may itself have contributed to attention moving on, since as Downs argued, once the public and media think that a government has responded to an issue, their concern and interest abates.

There are strong reasons for thinking that low salience will be the norm for climate change as a public interest problem. While frequently described as the greatest threat we face, climate change is at the same time what Giddens (2009: 2) describes as a "back-of-the-mind" issue, because "the dangers posed by global warming aren't tangible, immediate or visible in the course of day-to-day life". Crucially, in this respect, climate change is different from the localised air and water pollution problems which created an earlier generation of environmental movements (Nordhaus and Shellenberger, 2007: 112–113). Unlike these previous forms of pollution, greenhouse gases are invisible and odourless, and their worst effects will largely be felt by future generations and in the developing world. As a result, there is what Tony Blair called a 'mismatch' (Blair, 2004) between the environmental impact of the problem on the one hand and its electoral impact on the other.

In contrast to the diffuse and long term potential benefits of climate policy, the possible costs, in the form of environmental taxes and higher energy prices, are more immediate and tangible

(Harrison and Sundstrom, 2010: 8; Carter and Ockwell, 2007: 155–157; Lockwood, 2013: 21–23). In the period since the Climate Change Act was passed, the political visibility of the cost of climate policies in the energy sector passed through to consumers via energy bills has increased, mainly due to hostile media coverage and comment by opponents. Support for renewable energy, and in particular wind power, has been particularly subject to criticism (Powell, 2011; Moore, 2011; Moselle, 2011; Helm, 2012). At the same time, while there is consistent evidence for high levels of public support for renewable energy in general – of the order of 80% and above (e.g. DTI, 2006; Spence et al., 2010) – most people do not feel sufficiently strongly to ignore the costs (a combination of views that Humphrey (2009: 148) calls "simulative ecopolitics" and McLean (2008) calls "cheap talk environmentalism"). Thus Spence et al. (2010) find 36% of respondents unwilling to pay *anything* more for renewable electricity, and 88% unwilling to pay more than £10 a month. Eurobarometer surveys provide similar findings.

Within Patashnik's framework, policy costs (whether perceived or actual) can be seen as a *negative* mass policy feedback effect. Against this, leaders of the main political parties and environmental lobbying groups (e.g. Green Alliance, 2012) have all attempted to highlight the creation of new 'low-carbon jobs' as a form of positive mass feedback effect, to shore up the popularity of climate policy.

The effects of low carbon policies on employment are complex to capture, involving both job creation and destruction (Sorrell and Speirs, 2010; Fankhauser et al., 2008) and with no agreed definitions are open to controversy (Morriss et al., 2009). Much of the debate to date has focused on what Fankhauser et al. (2008) call the 'short-term effect', i.e. jobs lost in directly affected (high carbon) sectors and new jobs created in replacement industries, since these are the most visible and obviously attributable effects. The Government's official estimate of employment in the low carbon and renewable energy sub-sectors in 2010/11 was around 735,000, representing some 2.5% of total UK employment (BIS, 2012). Despite the wider economic downturn, job growth in these sectors has been running at 6–7% per year.

However, the absolute number of low carbon jobs matters less than their political effects, and there is as yet little evidence that new job creation in low carbon and renewable energy sectors is a specific major driver of wider *public* support for climate policy, or indeed of the support of interest groups. In particular, the active role played by manufacturing trade unions in Germany as part of the coalitions that drove support policies for wind and solar energy (Jacobsson and Lauber, 2006; Michaelowa, 2005) has not yet been replicated in the UK, where the low carbon transition has also been a relatively low priority for the Trades Union Congress.

The nature of climate change as an extreme type of public interest problem, with diffuse and distant benefits and more immediate costs of policy, create what is known in economics (e.g. Blackburn and Christensen, 1989) as a problem of 'credible commitment'; i.e. political leaders may give a commitment to policy change, but if they have a political incentive to reverse that policy because it is likely to become unpopular or undermines other policy goals (here, for example, maintaining living standards or competitiveness), then that commitment is seen as not credible, Investors, in particular, fear the future reversal of policy and themselves will not commit to assets specific to the new policy regime. This problem of credible commitment lies at the heart of public interest reform challenge (Patashnik, 2008: 5), including climate policy (e.g. Helm et al., 2003).

If the political sustainability of climate policy is unlikely to be underpinned by mass public support, at least in the short term, Patashnik's framework suggests that its sustainability will depend heavily on other factors, especially institutional changes and various group policy feedback effects. It is to these factors that we now turn.

4. Institutional transformation

The Climate Change Act's most obvious institutional innovation was the creation of the Committee on Climate Change. The idea of an independent expert body setting policy has its roots in the problem of credible commitment described above. One widely adopted solution in monetary policy has been to delegate decision making to an independent central bank, thereby 'binding the hands' of government (Rogoff, 1985). In the UK this has taken the form of the Monetary Policy Committee. A similar approach for energy and climate policy was proposed before the adoption of the Climate Change Bill (e.g. Helm et al., 2003), and promoted by David Cameron (Cameron, 2007). However, those drafting the Act rejected this model early on, believing that the range of policies involved in the low carbon transition was too political to delegate to a technical committee. Indeed, the long list of issues to which the Climate Change Committee had to give consideration in addition to climate science was included partly to give reassurance to sceptics in the Treasury. Moreover, under the Act the Committee's recommendations to government for carbon budgets are not legally binding and views differ on how far the Act might be used as the basis for legal challenge if these were rejected. McGregor et al. (2010: 43) conclude that the Committee is in fact best viewed as a 'Rolling Stern' body that provides a constantly updated analysis of the type that the Stern Review gave, and which also incorporates an additional monitoring function, not so much binding the hands of government as standing over it watching carefully. This institutional arrangement is not without effect, but it is weaker than straightforward delegation of powers (Helm, 2010: 193).

According to Patashnik (2008: 5, 164–5), sustained policy change typically involves not just the creation of new institutions, but also the dismantling of existing arrangements. However, the relevant competitor to the Climate Change Committee in recommending emissions reduction targets – the European Commission – remains in place. UK unilateral targets and budgets have to relate to European targets. The first three carbon budgets were already determined by the European target of reducing emissions by 20% by 2020 from a 1990 baseline. The relationship between budgets from 2023 onwards and future EU targets remains unclear and controversial.

A second significant institutional change that occurred in late 2008, not as a result of the Act but related to it, was the creation of a new Department of Energy and Climate Change. Previously, the lack of ownership of climate change targets in the Departments required to actually deliver them (i.e. Business and Transport), had been a real problem. At the time, a 'senior government source' was quoted as saying that "the climate change bill imposes legally binding carbon budgets on the whole of government – the department responsible for managing them needs to be able to deliver them" (Stratton, 2008). The new Department appeared to be firmly established as part of the UK government landscape, but over time some voices have emerged calling for it to be broken up again (e.g. Nelson, 2012), and as a relatively small Department it might be vulnerable under a future government. At the same time, other institutions with policy making powers in relevant areas have not been dismantled. The most important of these is the Treasury, which retains decision making over taxation and subsidy, including the Levy Control Framework for climate policies paid for on energy bills (HM Treasury, 2011). Uncertainty over the framework has had a major impact on investment in nuclear and renewable technologies over the last two years (e.g. Wynn, 2012).

5. Reconfiguration of group identities and affiliations

A second key issue is how far the Climate Change Act has reconfigured identities and incentives amongst different politically important groups. Here I consider effects on three key groups: environmental campaign groups, business and political parties.

Environmental campaign groups (especially Friend of the Earth) played a central role as policy entrepreneurs (Hill, 2012: 168–172) in the development of the Act. The most obvious – indeed, intentional – effect of the Act has been to give such groups a new legal tool in pressing for action on climate change, at least in principle. However, it has not transformed the political power of environmental campaign groups more fundamentally. As is a common problem for policy entrepreneurs (Patashnik, 2008: 23), environmental groups could not sustain a focus on the implementation of the Act, and as the public issue-attention cycle moved on they also shifted to new campaigns. At the same time, the Act did not lead to a large number of new supporters and members flooding in to the campaigning organisations. In fact all the major environmental campaigning groups were affected by the economic downturn, suffering a significant drop in income. For example, Friends of the Earth itself saw supporter income halved between 2007 and 2011. Environmental campaign groups, especially the umbrella advocacy group Green Alliance, still remain an important line of defence for the Act. However, the point is that such groups still need to defend the Act (Allott, 2012); it has not so far produced political momentum by swelling the ranks of the environmentalist movement.

In the business community, there is a potential split between those companies which saw opportunities in climate policy and adapting their business models, and those more concerned about the effects of climate policy on their costs and competitiveness (Jeswani et al., 2008). The first group has been cautiously active in advocating for stronger climate policy. Those in the second camp tend to be businesses in energy-intensive industries exposed to international competition, such as iron and steel, and cement (CCC, 2008: 371–72), as well as the large fossil fuel corporations. Energy intensive companies have been an active lobby seeking exemption from climate policy across the EU (Markussen and Svendsen, 2005; Wettestad, 2008; Helm, 2010). The climate change task force set up by the Confederation of British Industry (CBI) in 2005 attempted to bridge these two groups. Largely successfully, it aimed to get consensus on the recognition of climate change and the importance of high level long term targets, while also allowing room for disagreement on particular policies. In this context the passage of the Climate Change Bill was welcomed by the Confederation. The greater certainty that the Act appeared to provide strengthened the hands of those in the business community who saw emissions reduction as an opportunity.

However, these effects have become weakened over time by two factors. One is uncertainty about policy detail. The Act provided some certainty on high-level targets and budgets, but particular investments depend on the details of policies, and heightened uncertainty at this level since 2011 has had a corrosive effect (e.g. Vaughan, 2011). The second issue is concern about competitiveness in the context of uncertainty about both European-wide carbon targets beyond 2020 and the future of a global climate deal. Energy intensive industries in particular have expressed concerns about competitiveness (UK Steel, 2009: 16), but these go wider and have been also been voiced by senior Confederation representatives (e.g. Bentley, 2011). It is likely that the potential effects of climate policy on the competitiveness on UK business can be managed while they are still restricted to a small group of industries, but if differentials in effective carbon prices between the UK and the rest of the world continue to grow, a larger and larger proportion of the economy will be affected, and the support of the business community would be at risk.

The weakening of policy feedback effects in the business community matter, not least because they leave the Act more vulnerable in the face of hostile groups. The most important of these is the right wing of the Conservative party and its supporters in the media. In the period since the Climate Change Act, there has been a major shift in the party political context for climate policy. As described in some depth by Carter (2006, 2008) and Rollinson (2010), the mid-2000s were an unusual period of party political consensus on climate policy, creating a competition effect in which parties vied to appeal to the wave of concern and interest amongst voters about climate change, described in Section 3 above. This consensus was in large part the result of David Cameron's adoption of climate change as a strategy to "detoxify" the Conservative party (Carter, 2010: 2–3).

However, even at the time, this strategy was not embraced by all. As the Climate Change Bill was passing through Parliament, it faced criticism from some backbench Conservative MPs (e.g. Peter Lilley) and commentators on the right (e.g. Lea, 2008; Booker, 2008). A survey of Conservative MPs in July 2008 found that one third were not convinced about man-made climate change (Carter, 2010: 7). Since the Act was passed, perceptions and identities have become more not less entrenched and the Tory right appears to have more power within the party. Hostile commentary on climate policy has grown in the right-wing print media and on-line. Over one hundred Conservative MPs wrote to the Prime Minister in February 2012 calling for reductions in subsidies to wind power.

The breakdown in party consensus appears to have happened for a number of reasons. First, by the time that the Act had passed, it was beginning to become clear that the surge in the salience of climate change as an issue, on which that consensus was largely based, was already ebbing away. Indeed, by 2009, with the onset of the financial crisis, it seems likely that all the major political parties – including Labour in government which was forging ahead with the Low Carbon Transition Plan – were ahead of the public. The mood seemed to be captured by the new intake of Conservative party candidates in the 2010 general election. A survey of 141 prospective parliamentary candidates in January 2010 found that they collectively ranked reducing Britain's carbon footprint as the lowest out of 19 policy priorities (Montgomerie, 2010). A second reason is that the restraints on critics that were in place ahead of the 2010 general election are now gone. Cameron's detoxification strategy did not yield an outright majority, and at the same time the rise of the right-wing populist and climate sceptic-led UK Independence Party has strengthened the hands of Tory right, as has the 2012 Cabinet reshuffle. Third, they have the support of the Chancellor, who (under industry lobbying) appears to have decided that gas must have a central role in UK energy policy and that climate policy must not stand in the way of this. A fourth, and probably the most important reason is that supporters of the Act have not so far successfully challenged the way in which the right has framed climate policy. Their critique resonates so deeply with many potential Conservative voters not simply because climate policy potentially incurs costs on households and British industry, but also because it has been framed variously as a "green" tax, as "subsidies", as an unwarranted intervention by the state, and sometimes as associated with Europe (see e.g. Shipman, 2011) – all frames which connect with wider Conservative political values. Supporters of climate policy have so far struggled to reframe the issue (for example as one of job creation, innovation and growth) with Conservative politicians and voters.

Carter (2010: 11) argues that even though the salience of climate change has fallen away, the issue is likely to remain politicised, because the position of the right wing of the Conservatives provokes disagreement both within and between

parties. The Conservative right-wing ultimately benefit from the fact, not that most of the public agree with them on climate policy (which they do not), but rather because of the low salience of climate change. Even for Conservative voters, what they dislike, according to focus groups, is not so much Cameron's actual policy positions but rather him "just going on about the environment all the time" (cited in Carter, 2010: 8). As also discussed above, the low salience of climate policy makes it vulnerable to cost critiques, a fact that Conservative critics have utilised to the maximum. In opposition, the Labour party has mirrored this set of political signals. Its energy policy focus has been on prices rather than carbon, and the shadow chancellor, Ed Balls, has been a strong proponent of freezing fuel duty.

6. Investment effects

A final characteristic of politically sustainable policy in Patashnik's framework is that it brings about substantial investments based on the expectations that reform will be maintained, literally creating new vested interests which can act as a counterweight to interests that lose out in the post-reform economy. Here I focus on the electricity sector, since it expected to be the lead sector in decarbonisation and because it produces about 40% of carbon emissions.

At the same time investor confidence in the electricity sector is particularly dependent on policies driven by long-term decarbonisation targets. In theory, these policies include carbon pricing through the European Union greenhouse-gas emissions trading scheme. However, in practice, due to a mix of lobbying for exemptions by energy-intensive industry (see above) and technical design problems (Laing et al., 2013), the carbon price signal from the scheme has been too weak and volatile to drive significant low-carbon power sector investment. Instead, renewable support mechanisms, and ad hoc measures, such as the proposed 2030 decarbonisation target for the sector, are seen as the main drivers of confidence.

The sector is still dominated by fossil fuel plants, representing over three-quarters of electricity generating capacity in 2011 (DECC, 2012b, Table 5.7). However, existing assets give only a partial view of vested interests, because older plants are largely amortised. For potential effects arising from the Act, the trend in new investments is also relevant. Table 1 shows new build in capacity since 2006 and estimates of financial investments by the largest six generating companies (the 'Big Six') since the passage of the Act. The Big Six have made major new investments in both renewable electricity capacity (almost all wind) and thermal (almost all gas-fired) capacity since 2006. In terms of capacity, Big Six investments in gas are actually larger than in renewables, but in financial terms, investment in renewables since 2008 has been more than double that in gas.

Table 1
Estimates of recent electricity sector investments.

	Gross build since 2006 (MW)		Gross investment since CCA (£m)	
	Renewable	Thermal	Renewable	Thermal
Centrica	410	895	500	260
E.On UK	651	1,417	815	450
EDF Energy	435	1,300	365	600
RWE npower	1,822	3,700	1,650	1,400
Scottish Power	1,490	0	1,200	0
SSE	1,732	826	2,000	50
Total Big Six	6,540	8,138	6,530	2,760
Others	6,000	1,300		
Total	12,540	9,438		

Source: Bloomberg New Energy Finance (2012).
Note: Investments include both new build and acquisitions.

Large scale investments in electricity generating plant have long lead times. It is therefore also worth examining the forward investment pipeline to assess the potential effects of the Act. In theory, a large amount of new low carbon capacity should be built over the next decade. A background study for the 2011 Renewables Roadmap has projections of a five-fold growth in wind capacity and an eight-fold growth in biomass by 2020 (AEA Technologies, 2010). The Government also hopes that a new generation of nuclear plants will be built. But in practice, the broad picture is one of an investment freeze for both renewables and nuclear. According to the analysis by Bloomberg New Energy Finance in April 2012, investment by the Big Six is due to fall off a cliff after 2012 (BNEF, 2012: 11). Uncertainty is being created by the Electricity Market Review, the details of which have yet to be finalised at the time of writing, but also by open conflict within the coalition Government on the balance of incentives between gas and renewables.

At the same time, the political effects of the investments made to date are muted. About half the investment in low-carbon generation capacity has been made by large companies, which still hold mixed portfolios with a lot of high-carbon capacity. Upstream electricity technology firms have explicitly lobbied for a 2030 decarbonisation target for the electricity sector, but the Big Six have not. In a statement in the print media in December 2012 (*The Times* 4 December 2012) by a large number of businesses and NGOs calling on the Chancellor to agree to a binding decarbonisation target for electricity, none of the large energy providers were included. The other half of low carbon investment made since 2006 is in the hands of other smaller companies, but these do not form a particularly unified and effective lobby. More widely, and partly because of the split interests of the Big Six, renewable industry associations are fragmented and splintered. Thus the Climate Change Act has not yet produced an unambiguous vested interest for carbon reduction in the electricity generation sector.

Finally, it is worth considering the almost 350,000 households with solar PV systems, mostly installed since the introduction of the feed-in tariff introduced in April 2010. Representing only around 1.5% of households in the UK (a much lower number than in Germany or Spain), the political impact of the emergence of mass ownership of low carbon assets is hard to assess. On the one hand, many small actors find it harder to organise for collective action and be an effective lobby group, and even collectively owners of solar PV household systems have far less strategic power than large power firms. On the other hand, those same householders may have better political leverage than energy companies disliked by politicians and the public alike.

7. Conclusions

In this paper I have aimed to provide a comprehensive and systematic analysis of the forces working for and against the political sustainability of the UK's 2008 Climate Change Act. The Act, along with related issues such as a 2030 decarbonisation target for the electricity sector, is the subject of heated debate at the heart of UK climate policy. To bring analytical structure and order to the events since the passage of the Act, I have applied an approach for understanding the politics of implementation of public interest reforms originally developed in the US context by Patashnik (2003, 2008). Despite the fact that the political and institutional context in the UK differs significantly from that of the USA, Patashnik's framework can be usefully applied without amendment, as it uses as its building blocks quite general concepts from political science. Its utility here suggests that it might also be applied to explore successes and failures in climate policy (or related areas such as

renewable energy policy) in other countries and indeed comparatively. However, as discussed below, it does also have some limits, especially in relation to the ideational reframing of policy.

The Act was an attempt to address a public interest policy problem of an extreme nature, in which the benefits of action are highly diffused and distant in time, while costs are more immediate. The campaigners for a Climate Change Bill (and to some extent those in political parties) worked on the assumption that there had been a permanent shift in the political salience of climate change in the mid-2000s, and that the political future of the Act would be assured through public pressure on political leaders via Parliament. However, the evidence on the low salience of climate change, and the relatively high salience of energy costs, shows that this assumption was wrong.

In these circumstances, the political sustainability of the Act depended heavily on institutional transformation and policy feedback effects amongst politically important groups. The Act has changed the institutional landscape, although this change has its limits. The Committee on Climate Change is the most important innovation, but it has influence based on reputation and authority rather than formal powers. The creation of the Department for Energy and Climate Change, while not actually part of the Act, has been crucial for moving policy control over energy away from a department mainly focused on competitiveness. Nevertheless, the Department still remains constrained by the continuing power of the Treasury, and may itself be vulnerable to future restructuring.

The transformation of economic interests and political identities through feedback effects has been even less complete. To create new vested interests, the Act needed to induce new low-carbon physical and financial investments, most immediately in electricity generation. Here the picture is one of new investment in a mix of conventional gas-fired and new low-carbon capacity up to 2012, but then a stalling due to policy and political uncertainty. The Act's high level targets and budgets have not, on their own, been enough to create major investment feedback effects so far.

In terms of identities and preferences, the passage of the Act did help to strengthen the hand of those in the business community who see the opportunities of a low carbon economy as outweighing the risks. However, the Act has not yet dispelled concerns about the effects of unilateral action (as represented in the fourth carbon budget and beyond) on competitiveness, and uncertainty arising from party political disagreements. Support from business matters because the strength of hostility from the right wing of the Conservative party and associated commentators has not been abated by the passage of the Act, indeed the opposite has happened.

This failure to transform preferences and identities amongst groups hostile to climate policy poses the greatest present danger to the political sustainability of the Act. The basis of this hostility is largely ideational, in that it is linked not only to doubt about the scientific basis of anthropogenic climate change, but also ideological opposition to taxation, state intervention and the supranational powers of the European Union. Ensuring the political sustainability of the Act rests crucially either in a decline in the power of such groups, or in a discursive transformation of climate policy, in which it becomes dissociated with these ideas and credibly associated with other ideas that have more positive connotations across the political spectrum. This dimension of political sustainability points to what is probably the most important limitation of Patashnik's approach. His framework (and the associated US case studies) draws largely on the rational choice variant of political science, which emphasises the importance of institutions, and material and electoral interests in politics, while at the same time having a thinner account of the role of ideas.

The overall conclusion of the analysis undertaken here is that, in the absence to date of major shifts in group identities and affiliations, and major low-carbon investments, the Climate Change Act remains at risk of reversal. As Patashnik (2008: 32) notes, this could come either in the form of a coalition "exerting strong pressure to restore the status quo ante", or perhaps less likely, politicians themselves leading a reversal. Although repeal seems unlikely in the near future (despite calls for this by some), the risk that the Act may be significantly undermined over the next few years remains very real. One of the protagonists originally involved in the birth of the Act characterises it as "on a knife edge".

This analysis of difficulties faced in securing the Act politically should not be read as a statement of its ineffectiveness to date. It was a major innovation, and in a sense, the fierce debate in 2011 about adopting a stringent fourth carbon budget shows the worth of the Act; it is quite likely that without a law with long term targets and an institution like the Committee on Climate Change standing behind it, a carbon budget for the 2020s would never have been agreed to by the Government. The key question is whether the Act can continue to play that role, given that its political future is still uncertain.

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References

AEA Technologies, 2010. Analysis of Renewables Growth to 2020. Report to DECC. Available at: http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2185-analysis-of-renewables-growth-to-2020-aea-report.pdf (accessed 23.11.12).

Allott, K., 2012. The Climate Change Act – Death by neglect? http://blogs.wwf.org.uk/blog/business-government/green-economy/the-climate-change-act-death-by-neglect/ (accessed 13.11.12).

Anable, J., Lane, B., Kelay, T., 2006. Review of public attitudes to climate change and transport: summary report. Report for the Department for Transport. http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/adobepdf/163944/A_review_of_public_attitude1.pdf (accessed 07.05.11).

Baumgartner, F., Jones, B., 1993. Agendas and Instability in American Politics. University of Chicago Press, Chicago.

Bentley, N., 2011. Speech to CBI Green Business Dinner, 10 October 2011. Available at: http://www.cbi.org.uk/media/1044850/green_business_dinner_-_neil_-bentley.pdf (accessed 04.12.12).

Blackburn, K., Christensen, M., 1989. Monetary policy and policy credibility. Journal of Economic Literature 27, 1–45.

Blair, T., 2004. Speech on the environment and climate change, 15 September 2004. Available at: http://www.guardian.co.uk/politics/2004/sep/15/greenpolitics.uk (accessed 05.02.12).

Bloomberg New Energy Finance, 2012. UK Big 6 Investment Trends: a report for Greenpeace UK on the generation investments of the Big 6 utilities. Greenpeace, London. Available at: http://www.greenpeace.org.uk/media/reports/big-six-utilities-investment-trends (accessed 06.12.12).

Booker, C., 2008. Climate Change Bill makes chilling reading.In: The Telegraph 2 November 2008. .

Business, Innovation and Skills (BIS), 2012. Low Carbon Environmental Goods and Services (LCEGS): Report for 2010/11. BIS, London.

Burstein, P., 2003. The impact of public opinion on public policy: a review and agenda. Political Research Quarterly 56, 29–40.

Cameron, D., 2007. We will keep up the pressure on climate change. In: Speech to the Green Economy Conference. 12 March 2007 Available at: http://www.conservatives.com/News/Speeches/2007/03/David_Cameron_We_will_keep_up_the_pressure_on_climate_change.aspx (accessed 04.12.12).

Carter, N., 2006. Party politicisation of the environment in Britain. Party Politics 12, 757–767.

Carter, N., 2008. Combatting climate change in the UK: challenges and obstacles. Political Quarterly 79, 94–105.

Carter, N., 2010. Vote Blue, go Blue: have conservatives forgotten about the environment? In: Paper presented at the Political Studies Association 2010 Conference. Available at: http://www.psa.ac.uk/journals/pdf/5/2010/130_1187.pdf (accessed 10.12.12).

Carter, N., Ockwell, D., 2007. New Labour, New Environment? In: An Analysis of the Labour Government's Policy on Climate Change and Biodiversity Loss. Report to Friends of the Earth. Available at: http://celp.org.uk/projects/foe/docs/full-reportfinal.pdf (accessed 13.02.12).

Clarke, H., Sanders, D., Stewart, M., Whiteley, P., 2010. Electoral choice in Britain 2010: emerging evidence from the BES. Available at: http://www.bes2009-10.org/ (accessed 21.05.11).

Committee on Climate Change, 2008. Building a Low-carbon Economy. CCC, London Available at: http://www.theccc.org.uk/reports/building-a-low-carbon-economy (accessed 27.11.12).

Department for Energy and Climate Change, 2012a. Davey sets out measures to provide certainty to gas investors. Press Release 17 March 2012. Available at: http://www.decc.gov.uk/en/content/cms/news/pn12_025/pn12_025.aspx (accessed 09.12.12).

Department for Energy and Climate Change, 2012b. Digest of UK Energy Statistics. DECC, London.

Department for Environment, Food and Rural Affairs, 2010. 2010 Omnibus Survey on public attitudes and behaviours towards the environment: data tables. Available at: http://www.defra.gov.uk/evidence/statistics/environment/pub-att/download/omnibus-datatable.pdf (accessed 13.05.11).

Department of Trade and Industry, 2006. Renewable Energy Awareness and Attitudes Research: Management Summary. DTI, London Available at: http://webarchive.nationalarchives.gov.uk/+/http://www.dti.gov.uk/files/file29360.pdf.

Downing, P., Ballantyne, J., 2007. Tipping Point or Turning Point? Social Marketing and Climate Change. Ipsos MORI, London.

Downs, A., 1972. Up and down with ecology: the 'issue-attention cycle'. The Public Interest 28, 38–50.

Fankhauser, S., Sehlleier, F., Stern, N., 2008. Climate change, innovation and jobs. Climate Policy 8, 421–429.

Friends of the Earth, n.d. The Big Ask Campaign: a brief history of the campaign for a new climate change law. Available at: http://www.foe.co.uk/resource/briefing_notes/history_of_the_big_ask.pdf (accessed 20.12.12).

Friends of the Earth, 2006. The Big Ask Climate Debate – Tony Juniper's response to your comments. Available at: http://www.foe.co.uk/news/blair_juniper_tony_-juniper_response.html (accessed 20.11.12).

Giddens, A., 2009. The Politics of Climate Change. Polity Press, Cambridge.

Godsen, E., 2012. 'Laughable' energy policy rows will raise bills, Tory energy committee chairman Tim Yeo warns.In: The Telegraph 18 November 2012. .

Green Alliance, 2012. Green Economy: A UK Success Story. Green Alliance, London Available at: http://www.green-alliance.org.uk/uploadedFiles/Publications/reports/British_success_story_Issuu.pdf (accessed 17.12.12).

Hale, S., 2010. The new politics of climate change: why we are failing and how we will succeed. Environmental Politics 19, 255–275.

Harper, A., 2012. What's going wrong with politics and energy, and how to fix it.In: Green Alliance Blog 16 November 2012. Available at: http://greenallianceblog.org.uk/2012/11/16/whats-going-wrong-with-politics-and-energy-and-how-to-fix-it/ (accessed 23.11.12).

Harrison, K., Sundstrom, L., 2010. Introduction: global commons, domestic decisions. In: Harrison, K., Sundstrom, L. (Eds.), Global Commons, Domestic Decisions: The Comparative Politics of Climate Change. MIT Press, Cambridge, MA.

Helm, D., 2010. Government failure, rent-seeking, and capture: the design of climate change policy. Oxford Review of Economic Policy 26, 182–196.

Helm, D., 2012. The Carbon Crunch. Yale University Press, New Haven, CT.

Helm, D., Hepburn, C., Mash, R., 2003. Credible carbon policy. Oxford Review of Economic Policy 19, 438–450.

Hill, K., 2009. The UK Climate Change Act 2008 – Lessons for National Climate Laws. ClientEarth, London and Brussels Available at: http://www.clientearth.org/reports/climate-and-energy-lessons-from-the-climate-change-act.pdf (accessed 22.11.12).

Hill, M., 2012. The Public Policy Process, 6th edition. Pearson, London.

Treasury, H.M., 2011. Control Framework for DECC Levy-funded Spending. HM Treasury, London.

Hobolt, S., Klemmemsen, R., 2005. Responsive government? Public opinion and government policy preferences in: Britain and Denmark. Political Studies 53, 379–402.

Huber, E., Stephens, J., 2001. Development and Crisis of the Welfare State. Parties and Policies in Global Markets, Chicago.

Humphrey, M., 2009. Rational irrationality and simulation in environment politics: the example of climate change. Government and Opposition 44, 146–166.

Institute of Government, 2012. The Climate Change Act (2008). Available at: http://www.instituteforgovernment.org.uk/sites/default/files/climate_change_-act.pdf (accessed 26.11.12).

Jacobsson, S., Lauber, V., 2006. The politics and policy of energy system transformation – explaining the German diffusion of renewable energy technology. Energy Policy 34, 256–276.

Jeswani, H., Wehrmeyer, W., Mulugetta, Y., 2008. How warm is the corporate response to climate change? Evidence from Pakistan and the UK. Business Strategy and the Environment 18, 46–60.

Kingdon, J., 1995. Agendas Alternatives and Public Policies, 2nd edition. Longman, New York.

Laing, T., Sato, M., Grubb, M., Comberti, C., 2013. Assessing the effectiveness of the EU Emissions Trading Scheme. Working Paper No. 126. Centre for Climate Change Economics and Policy, London School of Economics Available at: http://www.lse.ac.uk/GranthamInstitute/publications/WorkingPapers/Papers/100-109/WP106-effectiveness-eu-emissions-trading-system.pdf (accessed 26.06.13).

Lea, R., 2008. The Climate Change Bill: a futile and very costly folly. Conservative-Home 29 October 2008. Available at: http://conservativehome.blogs.com/centreright/2008/10/the-climate-cha.html (accessed 20.12.12).

Lockwood, M., 2013. The political sustainability of the 2008 Climate Change Act. Working Paper 1302. Energy Policy Group, University of Exeter Available at: http://projects.exeter.ac.uk/igov/wp-content/uploads/2013/02/DOWNLOAD-WP2-The-political-sustainability-of-the-2008-Climate-Change-Act.pdf (accessed 25.06.13).

Lorenzoni, I., Pidgeon, N., 2006. Public views on climate change: European and USA perspectives. Climatic Change 77, 73–95.

Lorenzoni, I., O'Riordan, T., Pidgeon, N., 2008. Hot air and cold feet: the UK response to climate change. In: Compston, H., Bailey, I. (Eds.), Turning Down the Heat: The Politics of Climate Policy in Affluent Democracies. Palgrave Macmillan, London.

Markussen, P., Svendsen, G., 2005. Industry lobbying and the political economy of GHG trade in the European Union. Energy Policy 33, 245–255.

McLean, I., 2008. Climate change and UK politics: from Brynle Williams to Sir Nicholas Stern. Political Quarterly 79, 184–193.

McGregor, P., Swales, K., Winning, M., 2010. The Committee on Climate Change: a policy analysis. Discussion Papers in Economics No. 10-31. University of Strathclyde Available at: http://www.strath.ac.uk/media/departments/economics/researchdiscussionpapers/10-31_FINAL.pdf (accessed 20.11.12).

Mettler, S., Soss, J., 2004. The consequences of public policy for democratic citizenship: Bridging policy studies and mass politics. Perspectives on Politics 2, 55–73.

Michaelowa, A., 2005. The German wind lobby: how to promote costly technological change successfully. European Environment 15, 192–199.

Montgomerie, T., 2010. Cutting the deficit is the top priority of Tory candidates (reducing Britain's carbon footprint is the lowest priority). ConservativeHome Available at: http://conservativehome.blogs.com/goldlist/2010/01/cutting-the-deficit-is-the-top-priority-of-tory-candidates-reducing-britains-carbon-footprint-is-the.html (accessed 17.12.12).

Moore, S., 2011. 2020 Hindsight: Does the Renewable Energy Target Help the UK Decarbonise? Policy Exchange, London.

Morriss, A., Bogart, W., Dorchak, A., Meiners, R., 2009. Green Jobs Myths. University of Illinois Law and Economics Research Paper LE09-001. available at: http://leeds-faculty.colorado.edu/bhagat/green-jobs-myth.pdf (accessed 19.12.12).

Moselle, B., 2011. Climate Change Policy – Time for Plan B. Policy Exchange, London.

Nelson, F., 2012. Now Davey can abolish his job.In: Letter to the Financial Times 8 February 2012. .

Nordhaus, T., Shellenberger, M., 2007. Breakthrough: From the Death of Environmentalism to the Politics of Possibility. Houghton Miflin, Boston, MA and New York.

Olsen, M., 1965. The Logic of Collective Action. Harvard University Press, Cambridge, MA.

Page, B., Shapiro, R., 1983. Effects of public opinion on policy. American Political Science Review 77, 175–190.

Patashnik, E., 2003. After the public interest prevails: the political sustainability of policy reform. Governance 16, 203–234.

Patashnik, E., 2008. Reforms at Risk: What Happens After Major Policy Changes are Enacted. Princeton University Press, Princeton, NJ.

Pierson, P., 1993. When effect becomes cause: policy feedbacks and political change. World Politic 45, 4.

Pierson, P., 2005. The study of policy development. Journal of Policy History 17, 34–51.

Powell, M., 2011. Thinking about the Affordable. KPMG/AF Consult, London.

Pressman, J., Wildavsky, A., 1973. Implementation. University of California Press, Berkeley.

Rogoff, K., 1985. The optimal degree of commitment to an intermediate monetary target. Quarterly Journal of Economics 100, 1169–1189.

Rollinson, S., 2010. Changing Dynamics of Environmental Politics in Britain: a case study of the UK Climate Change Act. *Polis* 3, Winter 2010. Available at: http://www.polis.leeds.ac.uk/assets/files/students/student-journal/ug-summer-10/simon-rollinson-summer-10.pdf (accessed 19.11.12).

Rootes, C., Carter, N., 2010. Take blue, add yellow, get green? The environment in the UK general election of 6 May 2010. Environmental Politics 19, 992–999.

Scruggs, L., Benegal, S., 2012. Declining public concern about climate change: can we blame the great recession? Global Environmental Change 22, 505–515.

Schreurs, M., Tiberghien, Y., 2010. European Union leadership in climate change: mitigation through multilevel reinforcement. In: Harrison, K., Sundstrom, L. (Eds.), Global Commons, Domestic Decisions. MIT Press, Boston, MA.

Shipman, T., 2011. Green taxes to pay subsidies 'will cost up to 30,000 jobs'.In: Daily Mail 5 August 2011. .

Sorrell, S., Speirs, J., 2010. Low Carbon Jobs: The Evidence for Net Job Creation from Policy Support for Energy Efficiency and Renewable Energy – Scoping Note and Review Protocol. UK Energy Research Council, London Available at http://www.u-kerc.ac.uk/support/tiki-index.php?page_ref_id=2765 (accessed 12.12.12).

Spence, A., Venables, D., Pidgeon, N., Poortinga, W., Demski, C., 2010. Public perceptions of climate change and energy futures in Britain. Understanding Risk Working Paper 10-01. Cardiff University.

Stokes, D., 1963. Spatial models of party competition. American Political Science Review 57, 368–377.

Stratton, A., 2008. Debutant Miliband brings clout to new department.In: The Guardian 4 October 2008. .

Tempest, M., 2007. Climate change bill is revolutionary, says Blair.In: The Guardian 13 March 2007. .

The Telegraph, 2013. 'Too much green energy is bad for Britain' Telegraph View, *The Telegraph* 23 March 2013. Available at: http://www.telegraph.co.uk/comment/telegraph-view/9949595/Too-much-green-energy-is-bad-for-Britain.html.

UK Steel, 2009. Annual Review 2009. Available at: http://www.eef.org.uk/NR/rdonlyres/40B15622-2DD9-447B-B560-97BA667EC566/16977/UKSteelAnnualReview20091.pdf (accessed 01.12.12).

Vaughan, A., 2011. Marks & Spencer green chief attacks government's 'uncertain' policy.In: The Guardian 1 November 2011. .

Wettestad, J., 2008. EU Energy-intensive Industries and Emissions Trading Losers becoming Winners? Report 10/2008. Fridtjof Nansen Institute Available at: http://dspace.cigilibrary.org/jspui/bitstream/123456789/26555/1/FNI%20R10-08%20-%20Eu%20energy%20intensive%20industries%20and%20emissions%20trading.pdf?1 (accessed 01.12.12).

Whiteley, P., Stewart, M., Sanders, D., Clarke, H., 2005. The issue agenda and voting in 2005. In: Norris, P., Wlezien, C. (Eds.), Britain Votes 2005. Oxford University Press, Oxford.

Wynn, G., 2012. UK's uncertain funds for low-carbon energy. Reuters 30 October 2012. Available at: http://www.reuters.com/article/2012/10/30/column-wynn-energy-uk-idUSL5E8LU6QP20121030 (accessed 22.12.12).